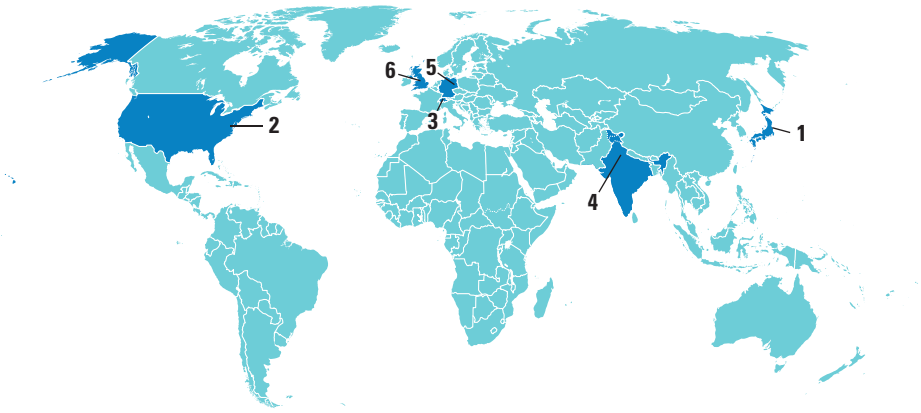
AROUND THE WORLD



Okuma, Japan **1**

WHO: Fukushima Caused Minimal Cancer Risk

The World Health Organization (WHO) on 28 February released a report saying that the Fukushima nuclear disaster will cause no observable increases in cancer rates among residents of other countries and a very minimal increased risk of cancer among residents in the vicinity of the power plant. Workers who battled problems at the plant do face higher risks for some cancers. The WHO team estimated the increased lifetime risk of leukemia, thyroid cancer, and female breast cancer based on earlier estimates of radiation exposure in different locations around the power plant, which experienced multiple meltdowns and explosions in the aftermath of the 11 March 2011 earthquake and tsunami.


Inspectors at a Fukushima reactor building in May 2012.

Greenpeace condemned the report, stating that it "shamelessly downplays the impact of early radioactive releases from the Fukushima disaster on people inside the 20 km evacuation zone who were not able to leave the area quickly." But Kazuo Sakai, a radiation biologist at Japan's National Institute of Radiological Sciences, believes that the risks are overestimated, noting that the dose estimates used were based on preliminary data; actual measurements have shown the dose levels to be lower. **http://scim.ag/WHOcan**

Washington, D.C. **2**

A Budget Race Without A Finish Line

The sequester has begun. But when and where will it end?

U.S. government agencies are still trying to figure out how to apply the $85 billion in mandatory budget cuts that went into effect on 1 March. And Congress could soften the blow later this month when it takes up emergency legislation to extend a temporary spending measure for the remaining 7 months of the current fiscal year.

The sequester, part of a 10-year, $1.2 trillion deficit reduction package agreed to in August 2011, wasn't supposed to happen because its across-the-board mechanism was thought to be too onerous. But now that never is here, domestic science agencies are calculating how to save 5% through some combination of reducing the number of new grants, shrinking existing grants, lowering administrative costs, and downsizing ongoing programs. See some scientists' reactions to the "sciquester" on page 1133, and stay tuned.

Zurich, Switzerland **3**

Secure Test Site for GM Crops

The Swiss government will create a permanently protected area on federal land for experiments with genetically modified (GM) crops, which is intended to reduce the risk of vandalized fields as well as security costs. In a paper published on 28 February in *Trends in Biotechnology*, scientists from the Agroscope Reckenholz-Tänikon research station and the University of Zurich detailed the plan, which was approved by the Swiss Parliament and officially announced on 7 February. The Swiss Federal Council approved spending 600,000 annually from 2014 to 2017 to create a protected field site of approximately 3 hectares at the Reckenholz research station, 10 kilometers north of Zurich. Researchers will initially use it to test GM wheat with resistance to powdery mildew, a fungal disease.

In 2008, masked activists threatened researchers at another experimental site near Reckenholz and destroyed about one-third of the plants there. In 2009, researchers used grant funds to install surveillance cameras, build a double fence with barbed wire and motion sensors, and hire security guards. The study estimates that Swiss researchers running recent GM trials spent 78% of their research funds on security. **http://scim.ag/SwissGM**

New Delhi **4**

A Flat Science Budget for 2013

Indian scientists face belt-tightening: On 28 February, the government sent to Parliament for approval a $12 billion budget for science and technology in 2013, ending several years of substantial increases for S&T. The flat budget, which reflects the government's desire to reduce an almost $85 billion deficit, will equate to spending reductions with inflation running at about 5%.

Among the few highlights in the budget proposal is a new, $50 million fund for projects aiming to lift people out of poverty. The National Innovation Council will manage the new fund; the kinds of projects it will sup-

Science LIVE

Join us on Thursday, 14 March, at 3 p.m. EDT for a live chat with experts on **how arts education affects the brain**. **http://scim.ag/science-live**

CREDITS (TOP TO BOTTOM): ROLAND FISCHER/WIKIMEDIA COMMONS; *THE YOMIURI SHIMBUN* VIA AP IMAGES

port have not been revealed. But the fund's size will surely limit its impact, says physicist and Indian National Science Academy President Krishan Lal. "While the intent is correct, for a country of 1.2 billion people, this is only a drop in the ocean."

Meanwhile, major planned initiatives will go ahead, including India's maiden mission to Mars and the launch of the country's first military satellite. Grants to individual researchers are likely to bear the brunt of cuts necessary to offset big science spending. Parliament must pass the budget before the start of the next fiscal year on 1 April.
http://scim.ag/Indbud

Lower Saxony, Germany **5**

Genetic Engineering School Project Cut Off

One of the largest states in Germany is closing school laboratories as part of a strategy to "keep Lower Saxony free of genetic engineering." The new regional government of Social Democrats and Greens announced that it would end support of the HannoverGEN initiative, a project that installed and equipped four school laboratories in the state, allowing pupils to perform experiments in genetic engineering such as isolating DNA from tomatoes. The project, which started in 2008, was seen as a success by the previous government, which planned to expand it to 100 schools.

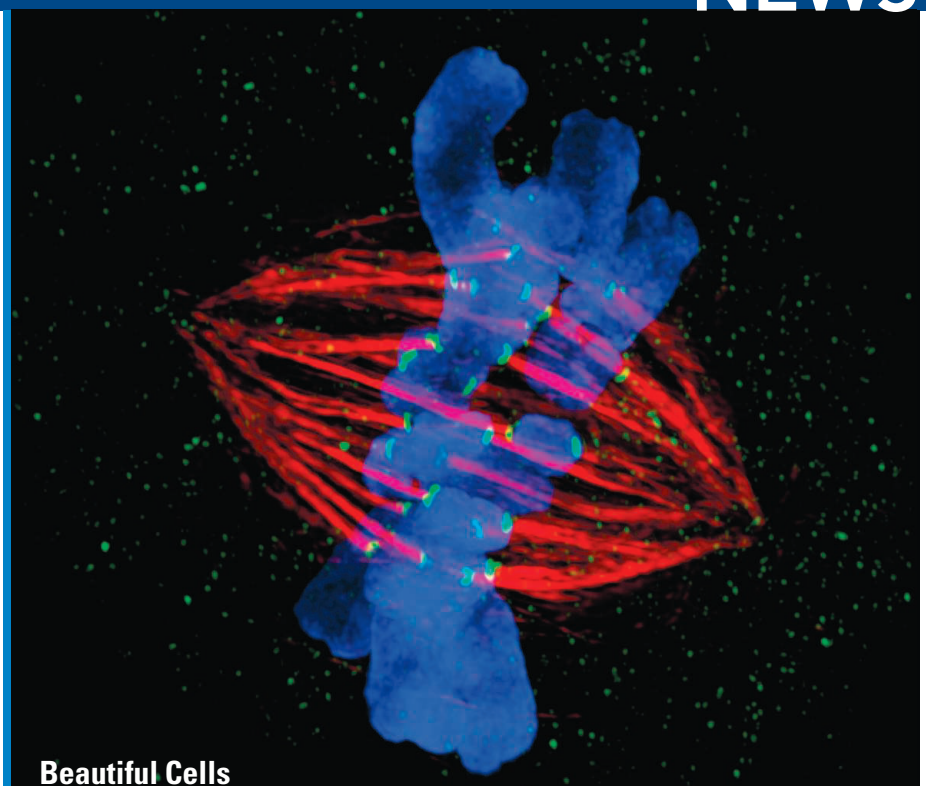
However, Greenpeace and other NGOs claimed that the learning materials gave a biased view of the debate about genetic engineering. The new government adopted that view and resolved in its coalition agreement to end the project. Hans-Jörg Jacobsen, a plant geneticist at the University of Hannover and one of the initiators of the project, said that termination was a mistake because the project "allowed pupils to make up their own minds based on knowledge." Students in the program have also protested the decision, and the project's coordinators and the schools' principals have started an online petition requesting that the state's prime minister visit a lab before deciding its future.

United Kingdom **6**

Ranking Countries' Health

The United Kingdom hasn't kept up with its European neighbors in health over the past 2 decades. In a paper published online by *The Lancet* on 4 March, Christopher Murray of the Institute for Health Metrics and Evaluation (IHME) at the University of Washington, Seattle, and more than a dozen U.K. public health experts report that although life expectancy increased by 4.2 years between 1990 and 2010, disability due to being overweight or obese has increased dramatically.

The overall health numbers place the United Kingdom below average when compared with the original 15 members of the European Union, Australia, Canada, Norway, and the United States. *The Lancet* paper comes at the same time that IHME published online analyses for 187 countries of its vast collection of data on disease burden and mortality due to 291 diseases (*Science*, 14 December 2012, p. 1414). Public health experts—and the general public—can sift through the findings at www.healthmetricsandevaluation.org.



Beautiful Cells

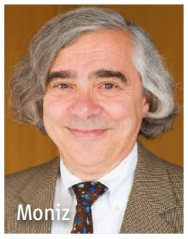
The winners are in—and they're colorful. On 27 February, GE Healthcare Life Sciences announced the winners of its 2012 Cell Imaging Competition, chosen by public vote with more than 15,000 votes cast. Cell biologist and cancer researcher Jane Stout of Indiana University (IU), Bloomington, took the award in the High- and Super-Resolution Microscopy category for this image of metaphase epithelial cells (microtubules are in red, kinetochores in green, and DNA in blue). Research scientist Anushree Balachandran of Genea Limited, based in Sydney, Australia, won the High-Content Analysis category, while cell biologist Markus Posch of the University of Dundee in the United Kingdom was the regional winner in Microscopy.

Stout's image was taken with the university's DeltaVision OMX imaging system—nicknamed the "OMG" microscope by IU researchers. The image will also light up New York City's Times Square this April when it appears on the famed electronic billboard known as the big screen.

CREDITS (TOP TO BOTTOM): COURTESY OF INDIANA UNIVERSITY; MASSACHUSETTS INSTITUTE OF TECHNOLOGY

NEWSMAKERS

Moniz Tapped for DOE, McCarthy for EPA



This week President Barack Obama tapped an academic scientist with a long Washington resume to lead the Department of Energy (DOE) and a data-hungry policy wonk who's already in town to run the Environmental Protection Agency (EPA).

Physicist **Ernest Moniz**, head of a high-profile energy think tank at the Massachusetts Institute of Technology, served as DOE's undersecretary and a senior White House science aide under President >>

>>NEWSMAKERS

Bill Clinton in the 1990s, and is a member of Obama's science advisory council. His wild, wavy locks prompted *The Washington Post*'s gossip column to suggest he'd have "the most iconoclastic hair in Cabinet history." He would replace Steven Chu at DOE if confirmed by the U.S. Senate.


McCarthy

Gina McCarthy, an air pollution specialist who is already a senior EPA official, worked for Mitt Romney, Obama's Republican opponent in the 2012 election, when he was governor of Massachusetts. She is known for a tough approach to crafting data-driven regulations—and for quips delivered in a thick New England accent. She would replace Lisa Jackson if confirmed.

Heart Researcher Wins Developmental Bio Prize


Olson

Insights into the mysteries of the heart have earned **Eric Olson** the 2013 March of Dimes Prize in Developmental Biology. He will receive the $250,000 prize in Washington, D.C., in May.

Olson studies the genetic signals that control heart development at the University of Texas Southwestern Medical Center in Dallas. He and his colleagues have shown that newborn mouse hearts can regenerate to a surprising degree in the first week after birth (*Science*, 25 February 2011, p. 1078). They have also found a suite of proteins and microRNAs that promote regeneration in older mouse hearts.

Outside the lab, Olson plays guitar and harmonica in a rock band called the Transactivators. One of their songs, "Mamas, Don't Let Your Stem Cells Grow Up to Be Cowboys," was inspired by a supporter of his work: Olson holds the Annie and Willie Nelson Professorship in Stem Cell Research.

Evolving Landscapes Through Artists' Eyes

Bright orange flames burn through the spruce trees, leaving behind a forest of curling gray smoke and blackened trunks. These are artist Ree Nancarrow's impressions of Alaska's Denali National Park, stitched into a quilt as part of an unusual collaboration between creative artists and scientists.

Denali Park is home to the Bonanza Creek Long-Term Ecological Research (LTER) site, one of 26 National Science Foundation (NSF) study areas chronicling change in the flora, fauna, and environment over decades. Bonanza Creek is also one of 11 LTERs that has invited artists to reflect on these changing landscapes in oils, watercolors, fiber art, photographs, essays, poems, and other media.

"We are, in a way, collecting humanities data," says Fred Swanson, a retired U.S. Forest Service scientist who worked at an Oregon LTER, HJ Andrews Experimental Forest, and now coordinates its Long-Term Ecological Reflections program.

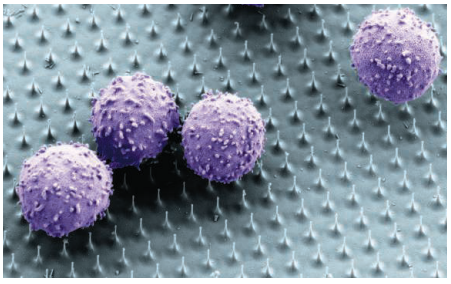
Some of the works are on display at NSF's headquarters in Arlington, Virginia. Photographs from Baltimore chronicle plants that thrive in the city; paintings from Konza Prairie in Kansas capture the heat and drama of wildfires; a poem describes a stare-down with a spotted owl. In one installation, rows of plastic cups each cradle a live mangrove sprout that will eventually be used to restore mangrove forests in Florida.

The exhibit is not open to the public, but Swanson hopes one day to display the works of the 39 artists where anyone can enjoy them. Meanwhile, you can see some of them online at ecologicalreflections.com.

FINDINGS

Dietary Salt Linked to Autoimmune Diseases

Salt in food may increase the risk of autoimmune diseases, according to provocative results reported this week in *Nature*. Immunobiologist David Hafler of the Yale School of Medicine and colleagues determined that a pinch of salt triggered cultures of unspecialized T cells to produce large numbers of destructive T_H17 cells, which have been implicated in diseases such as psoriasis, rheumatoid arthritis, and multiple sclerosis. They also showed that a salt-rich diet makes mice more susceptible to experimental autoimmune encephalomyelitis (EAE), a rodent illness similar to multiple sclerosis.



A salt connection also crystallized when computational biologist Aviv Regev of the Broad Institute in Cambridge, immunologist Vijay Kuchroo of Harvard Medical School in Boston, and colleagues pieced together the molecular circuit that controls specialization of T_H17 cells. An influential gene was *SGK1*, which helps cells manage sodium levels. And mice on high-salt rations developed a milder form of EAE if they lacked *SGK1*. The work doesn't establish that salt drives human autoimmune diseases, but "the stage is set to do precise experiments to test the hypothesis," Kuchroo says.

http://scim.ag/saltimm

Tweet, Shriek: On the Origin Of Language

The complex amalgam that is human language had humble beginnings: An analysis of bird songs and monkey calls suggests

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Random Sample

Doc Comic

Niche markets abound in the world of comic books: Whether you're interested in golden-age superheroes, 20th century history, or zombies, there's a comic for you. Now, there's "Missed It"—a new comic created by a clinician for clinicians.

There's a cultural hunger for medical storytelling, as the success of TV shows like *House* and *Grey's Anatomy* can attest, says bioethicist and professor of medicine Michael J. Green at the Pennsylvania State College of Medicine in Hershey. But "Missed It" goes a step further, depicting real-life tales from the emergency room, as written by Green and illustrated by artist Ray Rieck.

The first installment of the comic, which appears in the 5 March issue of *Annals of Internal Medicine*, follows a young doctor as he works his way through a medical puzzle. (How often the comic strip will run is still to be decided.) Green says he based the story on a personal experience with a seemingly routine case of chronic obstructive pulmonary disease—a lung disease that inhibits breathing—which he encountered during his medical residency in the 1990s.

"I have long felt that comics are an ideal way to tell stories that have an emotional impact," Green says. "Doctors are accustomed to telling and listening to stories, and I thought the time was ripe to try new ways to tell these stories."

that it may have evolved from a combination of simpler systems.

Our language has two layers: the words we use (the lexical structure) and how we organize those words (the expression structure). We're the only animal to combine the two, but some animals do use one or the other. Vervet monkeys use different alarm calls for different predators—a lexical structure with no grammar. And although nightingales can sing up to 200 different melodies, the individual notes have no meaning—an expression structure with no words.

Similar preexisting systems could have combined to form human language, researchers posited online last month in *Frontiers in Psychology*. "Evolution can work in different ways, and one way would be that existing mechanisms are combined into something new," says Johan Bolhuis, a biologist at Utrecht University in the Netherlands who was not involved with the study.

Still, he cautions, "we simply don't know enough about the evolution of all these systems to know if that is really the case." **http://scim.ag/langevol**

Shared Genetics Could Drive Psychiatric Disorders

Finding genes behind psychiatric disorders has been a struggle, but a massive new study of about 60,000 cases and controls offers additional clues. The study took an unusual tack, lumping together five conditions generally considered to be distinct. Lo and behold, it found a handful of gene variants shared by all of the disorders. Reporting last week in *The Lancet*, the researchers, part of a collaboration called the Psychiatric Genomics Consortium, describe three variants that correlate with autism spectrum disorder, attention deficit-hyperactivity disorder, bipolar disorder, major depressive disorder, and schizophrenia. A fourth gene variant surfaced more often in people with either bipolar disorder or schizophrenia than in controls. Two variants are linked to calcium channels, which help cells communicate.

The Lancet report is the largest yet to dig for genes underlying these conditions. As is common in so-called genome-wide association studies, the variants raise risk only slightly, by about 10%. But some researchers say that identifying them adds to growing evidence that psychiatric conditions, even those that present very differently in patients, might share common molecular causes that could help better define and treat them.

THEY SAID IT

*Science*NOW asked readers to share how the U.S. sequester might affect their research and careers. For more comments, visit http://scim.ag/sciquester—and keep us posted with #sciquester.

I'm a young scientist who applied for 2 post-doctoral fellowships...with new grants being cut, my future is compromised #sciquester
—@Frank_Leibfarth

#sciquester is a science career killer at a time when the government is calling for more scientists
—@sciencegeist

Biology research dont take well to "stops and starts", cell cultures and longitudinal studies need continuous care & assessment. #sciquester
—@mksin149